IN THE CLAIMS:

Claims 1 and 9 have been amended. This listing of the claims will replace all prior versions, and listings, of claims in the application.

1. (Amended) An apparatus for calculating satellite acquisition information to determine a position of an mobile station (MS) in a network assisted GPS system , comprising:

a satellite data collector for collecting satellite orbital information and pseudo range of more than three consecutive times from a plurality of satellites ;

a ~~satillite~~ satellite velocity calculator for calculating velocity of satellites using the satellite orbital information;

a pseudo velocity calculator for calculating pseudo velocities between the MS and each satellite observed by the MS at a position measurement time of the MS using the velocity of satellites; and

a satellite acquisition information calculator for calculating a code phase using the pseudo range, and for calculating a Doppler shift using the pseudo velocity.

2. (Original) The apparatus as set forth in claim 1, wherein the pseudo range is estimated considering a propagation delay between each satellite observed by the MS and the MS.

3. (Original) The apparatus as set forth in claim 1, wherein the pseudo velocity is estimated considering a propagation delay between each satellite observed by the MS and the MS.

4. (Original) The apparatus as set forth in claim 1, wherein the satellite orbital information is comprised of satellite coordinates and a coordinate extraction time.

5. (Original) The apparatus as set forth in claim 1, wherein the satellite acquisition information calculator calculates a code phase between each satellite and the MS using the following equation:

$$SV\_CODE\_PH = floor((\rho / C)*1000 - t*1023)$$
$$t = floor((\rho / C)*1000)$$

where SV_CODE_PH is a code phase between the satellite and the MS, ρ is a pseudo range, and C is the velocity of light.

6. (Original) The apparatus as set forth in claim 1, wherein the satellite acquisition information calculator calculates the Doppler shift containing both a frequency variation of the satellite signal at the time Ta at which the MS expects to search for the satellite signal and a differential value of the frequency variation.

7. (Original) The apparatus as set forth in claim 6, wherein the satellite acquisition information calculator calculates the frequency variation of the satellite signal received in the MS using the following equation:

$$\begin{aligned} DOPPLER0 (= PVsv\_bts \mid Ta) &= PVsv\_gpsrv \mid Tc \\ &+ (RVsv\_bts \mid Ta - RVsv\_gpsrv \mid Tc)*1000*1575420000/C \end{aligned}$$

where $DOPPLER0$ is the frequency variation of the satellite signal, $PVsv\_bts \mid Ta$ is a pseudo velocity between the satellite and the MS at the time Ta, $PVsv\_gpsrv \mid Tc$ is a pseudo velocity between the satellite and the apparatus at the time Tc, $(RVsv\_bts \mid Ta - RVsv\_gpsrv \mid Tc)$ is a difference between a real velocity of the satellite at the time Ta and a real velocity of the satellite at the time Tc.

8. (Original) The apparatus as set forth in claim 7, wherein the satellite acquisition information calculator calculates a differential value of the frequency variation of the satellite signal using the difference between the pseudo velocities of the times Ta0 and Ta1 by means of the following equation:

$$\Delta Doppler = (RVsv\_bts \mid Ta1 - RVsv\_bts \mid Ta0) * 1000 * 1575420000 / C$$
$$Doppler1 = floor(\Delta Doppler * 64)$$

where $RVsv\_bts \mid Ta0$ is a real range between the satellite and the BS at the time Ta, $RVsv\_bts \mid Ta1$ is a real range between the satellite and the BS at the time Ta1, C is a velocity of light, and $Doppler1$ is a differential value of the frequency variation of the satellite signal.

9. (Amended) A method for calculating satellite acquisition information to determine a position of an mobile station (MS) in a network assisted GPS system , the method comprising:

a) collecting satellite orbital information and pseudo range of more than three consecutive times from a plurality of satellites;

b) calculating velocity of satellites using the satellite orbital information ;

c) calculating pseudo velocities between the MS and the each satellite observed by the MS at a position measurement time of the MS using the velocity of satellites; and

d) calculating a code phase using the pseudo range, <u>and for</u> calculating a Doppler shift using the pseudo velocity.

10. (Original) The method as set forth in claim 9, wherein the pseudo range is estimated considering a propagation delay between the each satellite observed by the MS and the MS.

11. (Original) The method as set forth in claim 9, wherein the pseudo velocity is estimated considering a propagation delay between the each satellite observed by the MS and the MS.

12. (Original) The method as set forth in claim 9, wherein the satellite orbital information is comprised of satellite coordinates and a coordinate extraction time.

13. (Original) The method as set forth in claim 9, wherein the step (d) for calculating the satellite acquisition information comprises:

d1) calculating a code phase between the each satellite and the MS using the following equation:

$$SV\_CODE\_PH = floor((\rho / C) * 1000 - t * 1023)$$
$$t = floor((\rho / C) * 1000)$$

where SV_CODE_PH is a code phase between the satellite and the MS, ρ is a pseudo range, and C is the velocity of light.

14. (Original) The method as set forth in claim 9, wherein the step (d) for calculating the satellite acquisition information further comprises:

d2) calculating the Doppler shift containing both a frequency variation of the satellite signal at the time Ta at which the MS expects to search for the satellite signal and a differential value of the frequency variation.

15. (Original) The method as set forth in claim 14, wherein the step (d) for calculating the satellite acquisition information further comprises:

d3) calculating the frequency variation of the satellite signal received in the MS using the following equation:

$$DOPPLER0(=PVsv\_bts\,|\,Ta) = PVsv\_gpsrv\,|\,Tc + (RVsv\_bts\,|\,Ta - RVsv\_gpsrv\,|\,Tc)*1000*1575420000/C$$

where $DOPPLER0$ is the frequency variation of the satellite signal, $PVsv\_bts\,|\,Ta$ is a pseudo velocity between the satellite and the MS at the time Ta, $PVsv\_gpsrv\,|\,Tc$ is a pseudo velocity between the satellite and the apparatus at the time Tc, $(RVsv\_bts\,|\,Ta - RVsv\_gpsrv\,|\,Tc)$ is a difference between a real velocity of the satellite at the time Ta and a real velocity of the satellite at the time Tc.

16. (Original) The method as set forth in claim 15, wherein the step (d) for calculating the satellite acquisition information further comprises:

d4) calculating a differential value of the frequency variation of the satellite signal using the difference between the pseudo velocities of the times Ta and Ta1 by means of the following equation:

$$\Delta Doppler = (RVsv\_bts\,|\,Ta1 - RVsv\_bts\,|\,Ta0)*1000*1575420000/C$$
$$Doppler1 = floor(\Delta Doppler * 64)$$

where $RVsv\_bts\,|\,Ta0$ is a real range between the satellite and the BS at the time Ta, $RVsv\_bts\,|\,Ta1$ is a real range between the satellite and the BS at the time Ta1, C is the velocity of light, and $Doppler1$ is a differential value of the frequency variation of the satellite signal.